
50 CFR Part 17**Endangered and Threatened Wildlife and Plants; Proposal To Determine *Mammillaria Thornberi* (Thornber's Fishhook Cactus) To Be a Threatened Species**

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: The U.S. Fish and Wildlife Service proposes to list a plant, *Mammillaria thornberi* (Thornber's fishhook cactus) as a threatened species under the authority contained in the Endangered Species Act of 1973, as amended. Populations of this plant are known to occur in Pinal and Pima Counties, Arizona, on Federal, private, and Indian Reservation lands. There are

unconfirmed reports of populations in Sonora, Mexico. The U.S. populations are threatened with habitat destruction from urban expansion, a proposed Central Arizona Project aqueduct and possible reservoir, grazing, collection, and ground water depletion. This proposal, if made final, will implement the protection provided by the Endangered Species Act of 1973, as amended, for *Mammillaria thornberi*. Critical habitat is not being proposed at this time because informing the public of specific areas where specimens of this plant occur could pose an additional threat to the species' survival. The Service seeks data and comments from interested parties on this proposal.

DATES: Comments from all interested parties must be received by June 25,

1984. Public hearing requests must be received by June 8, 1984.

ADDRESSES: Comments and materials concerning this proposal should be sent to the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103. Comments and materials received will be available for public inspection during normal business hours, by appointment, at the Service's Regional Office of Endangered Species, 421 Gold Avenue, S.W., Room 407, Albuquerque, New Mexico.

FOR FURTHER INFORMATION CONTACT: Dr. Russell L. Kologiski, Botanist, Endangered Species Staff, Albuquerque, New Mexico (see **ADDRESSES** above) (505/766-3972).

SUPPLEMENTARY INFORMATION:

Background

Mammillaria thornberi was initially collected by Professor J. J. Thornber and planted in the University of Arizona cactus garden in 1902. Subsequently, C. R. Orcutt collected the type specimen and published the description (Orcutt, 1902). In general appearance, *Mammillaria thornberi* is very similar to other fishhook cacti. This cactus generally grows as a number of individual plants in clumps of up to 100. The stems are small, narrow cylinders, 5 to 10 (up to 25) centimeters long and up to 5 centimeters wide. The spines are moderately dense and partly cover the stem. There is one reddish-brown central spine per areole, with an apical hook, which spreads out at a right angle to the stem. The radial spines spread parallel to the stem, 15 to 20 per areole, and are straw colored with reddish-brown tips. The flowers are small. The petals and sepals are lavender, the stigma and fruit are red, and the seeds are shiny and black. Flowering and fruit set are in May and June.

Mammillaria thornberi is historically known to occur in Sonoran Desert Communities in Pima and Pinal Counties, Arizona. There are also unconfirmed reports from Sonora, Mexico. At present, there are two major population areas. The first population area is located in the Avra Valley and Saguaro National Monument-West. The healthiest and most abundant populations were observed at these localities. The plants in this population area occur on the Saguaro National Monument, Bureau of Land Management (BLM), and private lands. The second known population area is located on the Papago Indian Reservation. The plants in this area were occasional to rare and the populations were smaller in size of clumps and in number of individuals per clump than those in Avra Valley and Saguaro National Monument.

Mammillaria thornberi occurs in the Arizona Upland Subdivision of the Desertscrub Formation, at elevations of 240-720 meters, in deep, hot, arid, gravelly soils on flood plains, alluvial fans, and deeply dissected uplands. The vegetation is palo-verde/cactus shrub and creosote bush/bur-sage. Dominant associated species are creosote bush (*Larrea tridentata*), chain fruit cholla (*Opuntia fulgida*), palo-verde (*Cercidium microphyllum*), and triangle leaf bur-sage (*Ambrosia deltoidea*). *Mammillaria thornberi* is found under the canopy of shrubs and in their debris. The main nurse plants (which provide shade and protection) for *Mammillaria*

thornberi are *Ambrosia deltoidea*, *Cercidium microphyllum*, *Larrea tridentata*, and *Opuntia fulgida*.

The first Federal action involving this species began with Section 12 of the Endangered Species Act of 1973, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the *Federal Register* (40 FR 27823) of its acceptance of the report of the Smithsonian Institution as a petition within the context of Section 4(c)(2) of the Act (now Section 4(b)(3)(A)), and of its intention thereby to review the status of the plant taxa named therein. *Mammillaria thornberi* was included in the July 1, 1975, notice of review.

Mammillaria thornberi was included as a category 1 species in a list of plants under review for threatened and endangered classification in the December 15, 1980, *Federal Register* (45 FR 82480). Category 1 is comprised of taxa for which the Service presently has sufficient biological information to support listing as endangered or threatened. The Endangered Species Act Amendments of 1982 required that all petitions pending as of October 13, 1982, be treated as having been newly submitted on that date. The species listed in the December 15, 1980, notice of review are considered to be petitioned, and the deadline for a finding on those species, including *Mammillaria thornberi*, was October 13, 1983.

On October 13, 1983, the petition finding was made that listing *Mammillaria thornberi* was warranted but precluded by other pending listing actions, in accordance with Section 4(b)(3)(B)(iii) of the Act. Such a finding requires a recycling of the petition, pursuant to Section 4(b)(3)(C)(i) of the Act. Therefore, a new finding must be made; this proposed rule constitutes the finding that the petitioned action is warranted and proposes to implement the action in accordance with Section 4(b)(3)(B)(ii) of the Act.

A status report compiled in 1981 (Phillips *et al.*) and investigations carried out by Service botanists and others have provided new biological data which are included in this proposal. These new data include recent documentation of low numbers of plants and threats to the species.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations promulgated to implement

the listing provisions of the Act (codified at 50 CFR Part 424; under revision to accommodate 1982 amendments) set forth procedures for adding species to the Federal list. A species may be determined to be an endangered or a threatened species due to one or more of the five factors described in Section 4(a)(1) of the Act. These factors and their application to *Mammillaria thornberi* Orcutt (Thornber's fishhook cactus) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* Almost all known locations of *Mammillaria thornberi* are threatened with habitat alteration or loss. There are two known population areas for this species. These are the Saguaro National Monument, Avra Valley, and the Papago Indian Reservation. In the Saguaro National Monument, there are about 73 plants in an area of approximately 1,250 square meters; in the Avra Valley, about 332 plants occur over some 400 square meters of habitat. The Papago Indian Reservation contains about 195 plants at 24 scattered localities. In the Saguaro National Monument and Avra Valley, the plants appear to be healthy; on the Papago Indian Reservation, they occur in smaller clumps with fewer individuals per clump, and there is a high percentage of dead plants.

There is evidence that cacti have already been lost to habitat destruction. Historic locations in the northern Avra Valley are now cleared agricultural lands, and in the southern Avra Valley, *Mammillaria thornberi* habitat is found immediately adjacent to irrigated fields, suggesting that habitat there for the cactus has also been lost to agricultural development.

The Avra Valley is undergoing rapid development as Tucson expands westward. This relatively flat valley is considered desirable not only for agricultural use, but also for homes, trailer courts, business development, and the accompanying roads, powerlines, pipelines, canals, etc. In addition, the increased withdrawal of underground water for urban and agricultural use is lowering the water table, thus detrimentally affecting native vegetation along with the development. Long-term survival of those cacti found on private lands in the Avra Valley is unlikely (Phillips *et al.*, 1981).

On Federal lands, administered by BLM, in the Avra Valley, the cactus currently receives some protection; however, the State of Arizona has applied for transfer of 6,274 acres of the lands administered by BLM in the area to State ownership. Portions of three

Avra Valley sections of this land contain several populations of *Mammillaria thornberi*, one of which is extensive. Other lands administered by BLM in the area have also been identified for possible sale to private ownership, and may contain this species. These lands, once transferred to State or private ownership, are expected to undergo development (Ramsbacher, pers. comm., 1983).

An additional threat to *Mammillaria thornberi* and its habitat is the proposed construction of a Central Arizona Project aqueduct and possibly a reservoir through areas containing populations of the cactus. One of the prime aqueduct routes under consideration cuts directly through an area populated by *Mammillaria thornberi* for several kilometers, and all alternate routes could affect one or more populations.

On the Papago Indian Reservation, habitat is also being lost to agricultural and housing development, although to a much smaller degree. A portion of the Central Arizona Project includes the allocation of enough water to the Reservation to farm an additional 3,000 acres. This will quite likely cause further loss of habitat to *Mammillaria thornberi*.

Presently, *Mammillaria thornberi* habitat located on the Saguaro National Monument is believed to be safe from threats.

B. Overutilization for commercial, recreational, scientific, or educational purposes. *Mammillaria thornberi* has been of some interest to collectors of rare cacti in the past, and collecting will prove to be an even greater threat to the species now unless precise localities where it occurs are kept secret.

C. Disease or predation (including grazing). The population on the Papago Indian Reservation is in a heavily grazed area. Grazing is creating a negative impact on the cacti through trampling of vegetation and destruction and degradation of the habitat (Phillips *et al.*, 1981).

D. The inadequacy of existing regulatory mechanisms. The Arizona Native Plant law protects all cacti from collection without permission of the landowner and a State permit. Violation is a misdemeanor punished by a small fine, however, and habitat is not protected. Department of the Interior regulations protect plants on National Park Service lands. The Endangered Species Act will provide additional protection for this plant through Section 7 (Interagency Cooperation) requirements and through Section 9 which prohibits taking with intent to reduce to possession on Federal lands.

E. Other natural or manmade factors affecting its continued existence. The small population size and limited distribution of *Mammillaria thornberi* (about 600 plants in two population areas) increase the species' vulnerability to natural or man-caused stresses.

The proposed action has been arrived at through the careful assessment of the best scientific and commercial information available, as well as the best assessment of threats faced by this species. Based on the above assessments, the proposed action is to list *Mammillaria thornberi* as threatened without critical habitat. Threatened status seems appropriate because one of the populations is located on the Saguaro National Monument, because the Avra Valley population, while facing imminent threat, is presently in good condition, and because the Papago Indian Reservation population, while not nearly as large or healthy, is not under as much threat as the Avra Valley population. Thus *Mammillaria thornberi* is not in danger of extinction throughout all or a significant part of its range, but is likely, unless appropriate protections are extended, to become so within the foreseeable future.

Critical Habitat

Section 4(a)(3) of the Endangered Species Act, as amended, requires that to the maximum extent prudent and determinable the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for *Mammillaria thornberi* because its restricted distribution and accessibility make it vulnerable to threats from collection. The cactus may be sought as a curiosity by collectors of rare cacti if critical habitat maps are published in the **Federal Register** as is required by the Endangered Species Act. Publication of such maps would call attention to this species, make specimens easy to locate, and make it more vulnerable to taking. Therefore, it would not be prudent to determine critical habitat for *Mammillaria thornberi* at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by other Federal,

State, and private agencies, groups, and individuals. The Endangered Species Act provides for land acquisition and cooperation with the States. Following listing, the Service must initiate and carry out recovery actions for all listed species. The protection required by Federal agencies and taking prohibitions are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species which is proposed or listed as endangered or threatened. Regulations implementing this Interagency Cooperation provision of the Act are codified at 50 CFR Part 402 (see proposal at 48 FR 29980; June 29, 1983) now under revision.

Agencies are required under Section 7(a)(4) to informally confer with the Service on any action that is likely to jeopardize the continued existence of a proposed species. This protection would not accrue to *Mammillaria thornberi*. If this proposal is made final, Section 7(a)(2) will require Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of *Mammillaria thornberi*. If a proposed action may affect a listed species, the Federal agency must enter into consultation with the Service. The usual results of Section 7 consultation, if jeopardy is found, is modification and not cancellation of the proposed action. All of the routes for the proposed Central Arizona Project aqueduct and the site for the proposed reservoir would affect one or more of the Avra Valley *Mammillaria thornberi* populations. However, the Bureau of Reclamation has informally indicated its intent to set aside land as a sanctuary for this cactus, which will mitigate impact upon it. Measures such as this, combined with the presence of stable populations outside the project area, will serve to permit the project to proceed without jeopardy to this species. Any other Federal activities that would affect this species would have to include consideration of the impact on this cactus.

The Act and implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general trade prohibitions and exceptions that apply to all threatened plant species. With respect to *Mammillaria thornberi*, all trade prohibitions of Section 9(a)(2) of the Act, implemented by 50 CFR 17.71, would apply. These prohibitions, in part, would make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a

commercial activity, or sell or offer for sale this species in interstate or foreign commerce. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR Section 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances. It is anticipated that few permits would ever be sought or issued since the species is not common in cultivation, or in the wild.

Section 9(a)(2)(B) of the Act, is amended in 1982, states that it is unlawful to remove and reduce to possession endangered plant species from areas under Federal jurisdiction. Section 4(d) provides for the provision of such protection to threatened plant species through regulations. This new protection will accrue to *Mammillaria thornberi* once revised regulations are promulgated. Proposed regulations implementing this new prohibition were published in the July 8, 1983, **Federal Register** (48 FR 31417) and these will be made final following public comment. For purposes of this taking prohibition, *Mammillaria thornberi* occurs on Federal (BLM and Saguaro National Monument), and Indian (Papago Indian Reservation) lands.

Requests for copies of the regulations on plants and inquiries regarding them may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, D.C. 20204 (703/235-1903).

Mammillaria thornberi is on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Service will review this species to determine whether it should be considered for placement upon the Annex of the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, which is implemented through Section 8A(e) of the Act, and whether it should be considered for other appropriate international agreements.

Public Comments Solicited

The Service intends that any final rule adopted will be accurate and as effective as possible in the conservation of any endangered or threatened species. Therefore, any comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning any aspect of these proposed rules are hereby solicited. Comments particularly are sought concerning:

- (1) Biological, commercial trade, or other relevant data concerning any threat (or the lack thereof) to *Mammillaria thornberi*;
- (2) the location of any additional populations of *Mammillaria thornberi* and the reasons why any habitat of this species should or should not be determined to be critical habitat as provided by Section 4 of the Act;
- (3) additional information concerning the range and distribution of this species; and
- (4) current or planned activities in the subject area and their possible impacts on *Mammillaria thornberi*.

Final promulgation of the regulation on *Mammillaria thornberi* will take into consideration the comments and any additional information received by the Service, and such communications may lead to adoption of a final regulation that differs from this proposal.

The Endangered Species Act provides for a public hearing on this proposal, if requested. Requests must be filed within 45 days of the date of the proposal. Such requests should be made in writing and addressed to the Regional Director (see ADDRESSES section)

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to Section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References

- Johnson, R. Roy, R.L. Hall, and B.T. Brown. 1982. *Mammillaria thornberi* in the Saguaro National Monument, Tucson Mountain Unit. Draft Report, Cooperative National Park Resources Study Unit, University of Arizona, Tucson. 7 pp.
- Ocutt, C.R. 1902. Cactus Notes. The West American Scientist 12:161-164.
- Phillips, A.M., III, B.G. Phillips, N. Brian, L.T. Green, III, and J. Mazzoni. 1981. Status report on *Mammillaria thornberi*. U.S. Fish and Wildlife Service, Office of Endangered Species, Albuquerque, NM.

Authors

The authors of this proposed rule are Sandra Limerick and Margaret Olwell, Endangered Species Staff, U.S. Fish and Wildlife Service, Department of the Interior, P.O. Box 1306, Albuquerque, New Mexico 87103 (703/235-3972). The editor is John L. Paradiso, Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, D.C. 20240 (703/235-1975). Status information was provided by Dr. Arthur M. Phillips, III; Dr. Barbara G. Phillips; Nancy Brian; L. T. Green, III, and Jill Mazzoni, Museum of Northern Arizona, Route 4, Box 720, Flagstaff, Arizona 86001 (602/774-5211).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Proposed Regulation Promulgation

PART 17—[AMENDED]

Accordingly, it is hereby proposed to amend Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, as set forth below:

1. The authority citation for Part 17 reads as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*).

2. It is proposed to amend § 17.12(h) by adding, in alphabetical order, under the family Cactaceae, the following to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plant.

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(h) * * *

| Species | | Historic range | Status | When listed | Critical habitat | Special rule |
|------------------------------|----------------------------|----------------|--------|-------------|------------------|--------------|
| Scientific name | Common name | | | | | |
| Cactaceae—Cactus family | | | | | | |
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| <i>Mammillaria thornberi</i> | Thornber's fishhook cactus | U.S.A. (AZ) | T | | NA | NA |

| Species | | Historic range | Status | When listed | Critical habitat | Special rule |
|-----------------|-------------|----------------|--------|-------------|------------------|--------------|
| Scientific name | Common name | | | | | |
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Dated: April 12, 1984.

J. Craig Potter,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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